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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,161	02/21/2006	Philip Von Schroeter	05168	6118

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EXAMINER
MA, TIZE

ART UNIT	PAPER NUMBER
2628	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/564,161	VON SCHROETER ET AL.	
	Examiner	Art Unit	
	TIZE MA	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/16/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-14, 18-20, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al (US. 6,466,831 B1), and in view of Kopelman et al (US. 6,664,986 B1, already of record).

4. Regarding claim 1, Shibata et al teaches a procedure for representing a technical digital object on a screen, on the basis of a right-angled coordinate system with X, Y and Z axes (Fig. 5A, x,y,z coordinates), whereby the Z-axis and the Y-axis and the intersection (origin of the coordinate systems) in the representation plane of the screens and the X-axis run perpendicular to the representation plane and the technical object is

rotated around two axes running perpendicular to each other and is shifted along the X-axis for zooming the object (Fig. 5A-5C, axes perpendicular to each other, rotations; Fig. 5D, zooming), characterized in that the technical object is aligned along a stretched plane, in which the X-axis and the Y-axis run, and the T-axis established the origin of the coordinate system and is moved around a maximal five degrees of freedom, whereby a rotation (Rot_z) is chosen as the first degree of freedom around the Z-axis, a rotation (Rot_t) is chosen as the second degree of freedom around the T-axis, a translation of the object along the T-axis is chosen as the third degree of freedom and the translation of the object along the X-axis is chosen as the fourth degree of freedom (column 6, line 36-column 7, line 25, various rotations and translations, totally six degrees of freedom).

5. However, Shibata et al does not teach that the object is a dental object, such as artificial dentures or at least a model of a tooth or the area of the jaw which will provided with the artificial dentures.

6. Kopelman et al teaches modeling 3D dental objects (abstract, Fig. 1 and 3) using computers. The computer implemented 3D modeling provides a graphical view without creating the actual object.

7. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Shibata et al and Kopelman et al to model dental object in 3D for the benefit of graphical view of the object without creating the actual object.

8. Regarding claim 2, Shibata et al teaches the procedure according to claim 1, characterized in that the technical dental object is maximally moved around the first,

second, third and fourth degrees of freedom (column 6, lines 24-35, totally six degrees of freedom, any one or combinations of the six would result in the first to fourth degrees of freedom).

9. Regarding claim 3, Shibata et al teaches the procedure according to claim 1, characterized in that as a fifth degree of freedom, a rotation (Rot_x) of the object around the X-axis is chosen (Fig. 5C, rotation around x-axis).

10. Regarding claim 4, Shibata et al teaches the procedure according to claim 1, characterized in that the technical dental object is maximally rotated around an angle around the T-axis, whereby $\alpha<360^{o}$, particularly $\alpha \leq 180^{o}$ is selected (Rotation as in Fig. 3A, then rotation as in Fig. 3B choosing the new y axis as T-axis).

11. Regarding claim 5, Shibata et al does not explicitly teaches the procedure according to claim 1, characterized in that the technical dental object is represented on the screen in such a way that the technical dental object is established independent of its movement or representation from the origin of the coordinate system. However, It would have been well known that the technical object can be established independent of its movement or representation from the origin of the coordinate system.

12. Claims 6 and 7 describe how to choose the coordinates for the object, and the alignments of the axes. They are all up to the choices of the users.

13. Claims 8-11 describe how to position the object in the coordinates. They are all up to the choices of the users.

14. Regarding claim 12, Shibata et al teaches the procedure according to claim 1, characterized in that at aligning the object on the screen, the input device used exhibits

input element, over which the alignment of the object is arranged around the respective degree of freedom separated from each other (column 6, lines 39-67. Mouse, rotations by using mouse).

15. Regarding claim 13, Shibata et al teaches the procedure according to claim 9, characterized in that as an input device, such a one with four input elements in used (Fig. 1, mouse; four input elements as switches 8 and 9, ball 4, body 3).

16. Regarding claim 14, Shibata et al teaches the procedure according to claim 9, characterized in that as an input element, a changeover switch is used for duplicating a further input element (Fig. 1, mouse; column 6, lines 50-53, switch 9).

17. Regarding claim 18, Shibata et al teaches the procedure according to claim 9, characterized in that the object through optional operation of an individual input element, as well as combinatory operation of two input elements is moved around four degrees of freedom in a limited fashion (column 6, line 39-column 7, line 25, individual or combinatory operations of input elements).

18. Regarding claim 19, the combination of Shibata et al and Kopelman et al remains as applied to claim 1 above. Kopelman et al also teaches procedure for manufacturing artificial dentures on the basis of digitized data of a jaw area which is to be provided with the artificial dentures, assessing the artificial dentures based on the digitized data and representation at least of the artificial dentures on a screen, according to claim 1, evaluating the represented artificial dentures through moving the artificial dentures on the screen maximally around five degrees of freedom, and, if necessary, changing the represented artificial dentures and the subsequent manufacture of the artificial dentures

on the basis of the data that correspond to the represented artificial dentures (Fig. 2, various views and movements of the model of artificial denture on the screen).

19. Regarding claim 20, Kopelman et al teaches the procedure according to claim 19, characterized in that the artificial dentures and the jaw area to be provided with the artificial dentures be represented on the screen (Fig. 2, the model of artificial denture on the screen).

20. Regarding claim 23, Shibata et al teaches the procedure according to claim 19, characterized in that the artificial dentures and/or the jaw area (digital object) is maximally shifted around four degrees of freedom on the screen (column 6, lines 24-35, totally six degrees of freedom, combinations of some of the six would result in the four degrees of freedom) .

21. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al (US. 6,466,831 B1), and in view of Kopelman et al (US. 6,664,986 B1, already of record), as applied to claims 1 and 9 above, and further in view of Wang (US. Pub. 2002/0060663 A1).

22. Regarding claims 15-17, the combination of Shibata et al and Kopelman et al remains as applied to claims 1 and 9 above. However, the combination does not teach characterized in that as one or several input elements an adjusting wheel is used; characterized in that as the input device, a function of at least two input elements of an exercised trackball; and characterized in that by using a trackball (ball) as one of the input elements, the object is rotated around the first and second axis, as well as around an axis that runs perpendicular to this axis through a similar rotation of the trackball.

23. Wang teaches an input device which has input elements of an adjusting wheel and a trackball (Fig. 11, 198, 104). These additional input elements provide the ability or convenience of direct manipulations of 3-D objects or movements for some applications (paragraph [0012]).

24. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the input device used in the combination of the procedures in Shibata et al and Kopelman et al to include an adjusting wheel and a trackball as shown in Wang to perform some of the movements for convenience of direct manipulations of 3-D objects.

25. Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al (US. 6,466,831 B1), and in view of Kopelman et al (US. 6,664,986 B1, already of record), as applied to claims 1 and 19-20 above, and further in view of Rubbert et al (US. Pub. 2002/0010568 A1).

26. Regarding claims 21-22, the combination of Shibata et al and Kopelman et al remains as applied to claims 1 and 19-20 above. However, the combination does not explicitly teach characterized in that assessing the artificial dentures based on the digitized data of the jaw area to be provided with the artificial dentures with stored parameters, such as wall thickness of the artificial dentures or cement gap between the artificial dentures and jaw area combined and from such data attained, the artificial dentures are assessed and represented on the screen; and characterized in that the artificial dentures, which are represented on the screen, are modeled by an electronic change of the data.

27. Rubbert et al teaches characterized in that assessing the artificial dentures based on the digitized data of the jaw area to be provided with the artificial dentures with stored parameters, and characterized in that the artificial dentures, which are represented on the screen, are modeled by an electronic change of the data (paragraph [0065], obtaining the three-dimensional digital data of the patient's teeth from the scanning node and displaying the model. Paragraph [0106], when changing any parameter, the change is immediately reflected in the view of the model of the dentition). The model is more useful if it is based on data.

28. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combination of the procedures in Shibata et al and Kopelman et al to make the digital model based on data or parameters and change the model when the data is changed as shown in Rubbert et al so that the model is more useful.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIZE MA whose telephone number is (571)270-3709. The examiner can normally be reached on Mon-Fri 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xiao M. Wu can be reached on 571-272-7761. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tm

/XIAO M. WU/
Supervisory Patent Examiner, Art Unit 2628